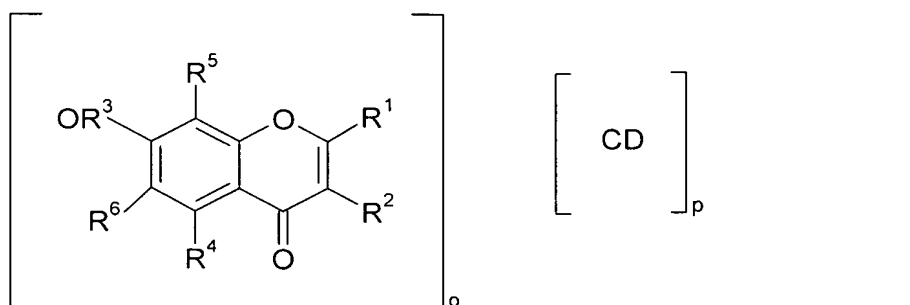


# Patent Claims

## 1. Complex compound of the formula I

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in which

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- R<sup>1</sup> and R<sup>2</sup> may be identical or different and are selected from
  - H, -C(=O)-R<sup>7</sup>, -C(=O)-OR<sup>7</sup>,
  - straight-chain or branched C<sub>1</sub>- to C<sub>20</sub>-alkyl groups,
  - straight-chain or branched C<sub>3</sub>- to C<sub>20</sub>-alkenyl groups, straight-chain or branched C<sub>1</sub>- to C<sub>20</sub>-hydroxyalkyl groups, where the hydroxyl group may be bonded to a primary or secondary carbon atom of the chain and furthermore the alkyl chain may also be interrupted by oxygen, and/or
  - C<sub>3</sub>- to C<sub>10</sub>-cycloalkyl groups and/or C<sub>3</sub>- to C<sub>12</sub>-cycloalkenyl groups, where the rings may each also be bridged by -(CH<sub>2</sub>)<sub>n</sub>- groups, where n = 1 to 3,
- R<sup>3</sup> stands for H or straight-chain or branched C<sub>1</sub>- to C<sub>20</sub>-alkyl groups,
- R<sup>4</sup> stands for H or OR<sup>8</sup>,
- R<sup>5</sup> and R<sup>6</sup> may be identical or different and are selected from
  - -H, -OH,
  - straight-chain or branched C<sub>1</sub>- to C<sub>20</sub>-alkyl groups,
  - straight-chain or branched C<sub>3</sub>- to C<sub>20</sub>-alkenyl groups,
  - straight-chain or branched C<sub>1</sub>- to C<sub>20</sub>-hydroxyalkyl groups, where the hydroxyl group may be bonded to a primary or sec-

ondary carbon atom of the chain and furthermore the alkyl chain may also be interrupted by oxygen, and

$R^7$  stands for H, straight-chain or branched  $C_1$ - to  $C_{20}$ -alkyl groups, a polyhydroxyl compound, such as, preferably, an ascorbic acid radical or glycosidic radicals, and

$R^8$  stands for H or straight-chain or branched  $C_1$ - to  $C_{20}$ -alkyl groups,

where at least 2 of the substituents  $R^1$ ,  $R^2$ ,  $R^4$ - $R^6$  are other than H or at least one substituent from  $R^1$  and  $R^2$  stands for  $-C(=O)-R^7$  or  $-C(=O)-OR^7$ ,

CD stands for a cyclodextrin molecule

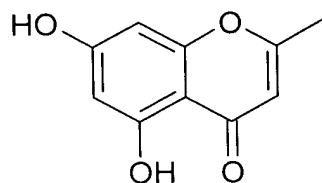
o stands for the number 1 and

p stands for a number from the range 0.5 to 3.

2. Complex compound according to Claim 1, characterised in that the cyclodextrin CD is an alpha-, beta-, or gamma-cyclodextrin, preferably a gamma-cyclodextrin, which is optionally  $C_{1-24}$ -alkyl- or  $C_{1-24}$ -hydroxyalkyl-substituted at one or more hydroxyl groups, particularly preferably hydroxypropyl-gamma-cyclodextrin.
3. Complex compound according to at least one of the preceding claims, characterised in that  $R^3$  stands for H and  $R^4$  stands for OH, where at least one of the radicals  $R^5$  and  $R^6$  preferably additionally stands for OH.
4. Complex compound according to at least one of Claims 1 or 2, characterised in that characterised in that  $R^5$  and  $R^6$  stand for H.
5. Complex compound according to at least one of the preceding claims, characterised in that one of the radicals  $R^1$  or  $R^2$  stands for H and the other radical stands for  $-C(=O)-R^7$ ,  $-C(=O)-OR^7$  or a straight-chain or branched  $C_1$ - to  $C_{20}$ -alkyl group.

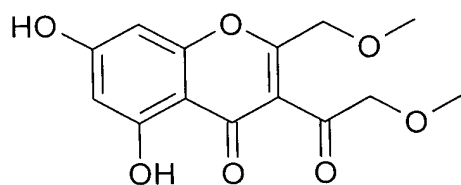
6. Complex compound according to at least one of the preceding claims, characterised in that the chromone moiety of compound I is a compound selected from the compounds having the formulae IIa-IIn:

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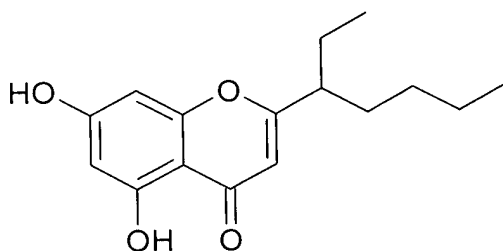
IIa

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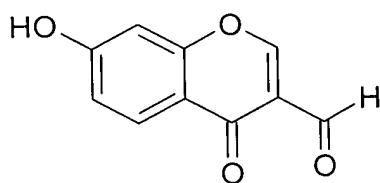
IIb

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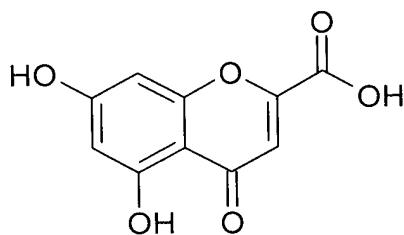
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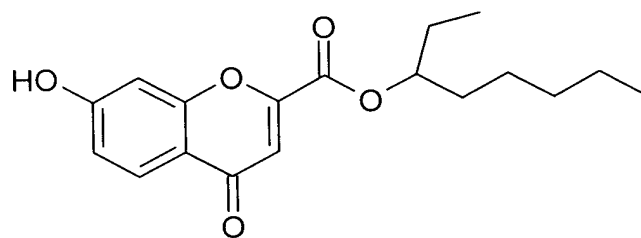
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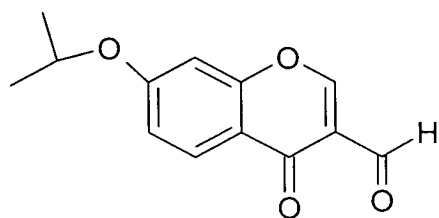
IIe

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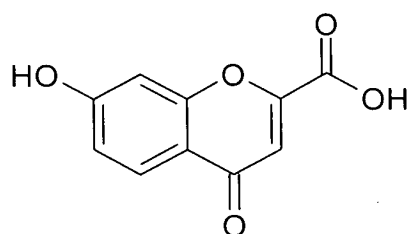
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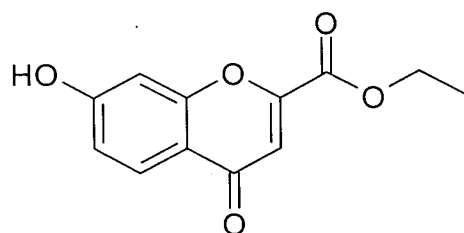
IIg

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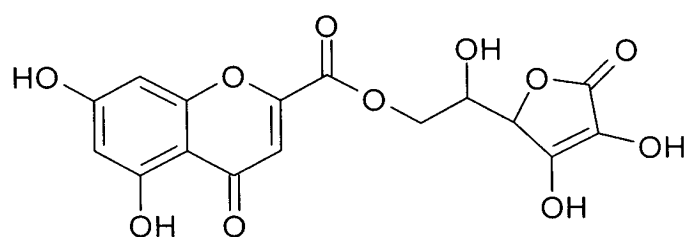
IIh

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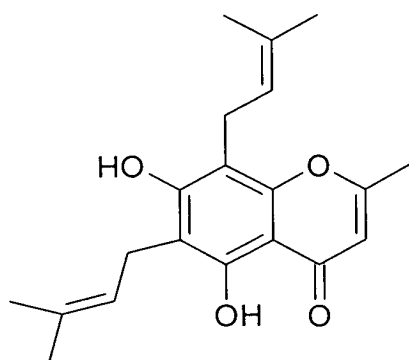
Ili

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IIk

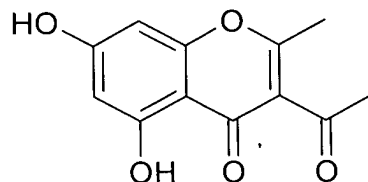
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IIIm

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IIa

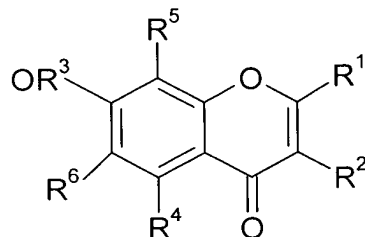
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7. Complex compound according to at least one of the preceding claims, characterised in that, in formula I, o is equal to 1 and p is in the range from 1.75 to 2.1, where p is preferably equal to 2.

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8. Process for the preparation of complex compounds according to at least one of Claims 1 to 7, characterised in that compounds of the formula II

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II

in which

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$R^1$  and  $R^2$  may be identical or different and are selected from H,  $-C(=O)-R^7$ ,  $-C(=O)-OR^7$ ,

- straight-chain or branched  $C_{1-}$  to  $C_{20}$ -alkyl groups,
- straight-chain or branched  $C_{3-}$  to  $C_{20}$ -alkenyl groups, straight-chain or branched  $C_{1-}$  to  $C_{20}$ -hydroxyalkyl groups, where the hydroxyl group may be bonded to a primary or secondary carbon atom of the chain and furthermore the alkyl chain may also be interrupted by oxygen, and/or

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- C<sub>3</sub>- to C<sub>10</sub>-cycloalkyl groups and/or C<sub>3</sub>- to C<sub>12</sub>-cycloalkenyl groups, where the rings may each also be bridged by -(CH<sub>2</sub>)<sub>n</sub>- groups, where n = 1 to 3,

R<sup>3</sup> stands for H or straight-chain or branched C<sub>1</sub>- to C<sub>20</sub>-alkyl groups,

R<sup>4</sup> stands for H or OR<sup>8</sup>,

R<sup>5</sup> and R<sup>6</sup> may be identical or different and are selected from

- H, -OH,

- straight-chain or branched C<sub>1</sub>- to C<sub>20</sub>-alkyl groups,

- straight-chain or branched C<sub>3</sub>- to C<sub>20</sub>-alkenyl groups,

- straight-chain or branched C<sub>1</sub>- to C<sub>20</sub>-hydroxyalkyl groups, where the hydroxyl group may be bonded to a primary or secondary carbon atom of the chain and furthermore the alkyl chain may also be interrupted by oxygen, and

R<sup>7</sup> stands for H, straight-chain or branched C<sub>1</sub>- to C<sub>20</sub>-alkyl groups, a polyhydroxyl compound, such as, preferably, an ascorbic acid radical or glycosidic radicals, and

R<sup>8</sup> stands for H or straight-chain or branched C<sub>1</sub>- to C<sub>20</sub>-alkyl groups,

where at least 2 of the substituents R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup>-R<sup>6</sup> are other than H or at least one substituent from R<sup>1</sup> and R<sup>2</sup> stands for -C(=O)-R<sup>7</sup> or -C(=O)-OR<sup>7</sup>, are reacted with cyclodextrins CD in solution, preferably at elevated temperature.

9. Process according to Claim 8, characterised in that cyclodextrin is employed in excess or precisely in the molar ratio 2 : 1 based on the chromone of the formula II.

10. Composition comprising a suitable vehicle, characterised in that the composition comprises

- 0.005 to 99% by weight of a complex compound of the formula I according to Claim 1 or the composition comprises

- 0.002 to 70% by weight of cyclodextrin and

- 0.001 to 60% by weight of at least one compound of the formula II according to Claim 8 or topically tolerated salts and/or derivatives thereof.

- 5 11. Composition according to Claim 10, characterised in that the one or more compounds of the formula I are present in the composition in amounts of 0.01 to 20% by weight, preferably 0.05 to 10% by weight and particularly preferably 0.1 to 5% by weight.
- 10 12. Composition according to Claim 10, characterised in that the content of cyclodextrins in the composition is 0.01-20.0% by weight, preferably 0.05-10.0% by weight, particularly preferably 0.1-5.0% by weight, in each case based on the total weight of the composition, and the content of compounds of the formula II in the composition is 0.01 to 20% by weight, preferably 0.05 to 10% by weight and particularly preferably 0.1 to 5% by weight, based on the composition as a whole, where the the proportion of the compounds of the formula II in the composition is very especially preferably in the range from 0.1 to 2% by weight, based on the composition as a whole.
- 15 13. Composition according to at least one of the preceding claims, characterised in that the composition comprises one or more antioxidants and/or one or more UV filters.
- 20 14. Use of a complex compound of the formula I or a composition according to at least one of Claims 10 to 13 for the care, maintenance or improvement of the general state of the skin or hair.
- 25 15. Use of a complex compound of the formula I or a composition according to at least one of Claims 10 to 13 for prophylaxis against time- and/or light-induced ageing processes of the human skin or human hair, in particular for prophylaxis against dry skin, wrinkling and/or pigment defects, and/or for the reduction or prevention of damaging effects of UV rays on the skin.
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16. Use of a complex compound of the formula I or a composition according to at least one of Claims 10 to 13 for prophylaxis against or reduction of skin unevenness, such as wrinkles, fine lines, rough skin or large-pored skin.

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17. Process for the preparation of a composition according to at least one of Claims 10 to 13, characterised in that at least one compound of the formula II and a cyclodextrin or at least one compound of the formula I having radicals as described above is mixed with a cosmetically or dermatologically or food-suitable vehicle.

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18. Use of a compound of the formula I for the preparation of composition according to at least one of Claims 10 to 13.

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